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ABSTRACT

Phoneme awareness, or the ability to recognize a spoken word as a sequence of individual sounds, is thought to be an essential prerequisite to successful literacy. A child-based phoneme awareness training program integrating children's experience and activities with sound awareness and print immersion was developed at a small urban elementary school in an effort to improve at-risk students' literacy rates. The program makes use of weekly targeted sounds, nursery rhymes, poems, songs and shared reading experiences to create a non-threatening learning environment. To examine program effectiveness, a study was undertaken to review program design and implementation and determine the effects on the early literacy development of 24 of the at-risk children. Quantitative data were collected through pretests administered in November 1992, and posttests administered in April 1993; qualitative data were collected through classroom observations and discussions with teachers and students. Tests of students' skills indicated a significant increase in students' reading, spelling, letter identification, print concept, and vocabulary skills. Classroom observations noted increased student interaction in print and sound awareness activities during shared reading exercises. The study findings provide strong evidence for the inclusion of phoneme awareness training in all kindergarten curricula. (Tables of test results and 30 references are included.) (BCY)

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Phoneme Awareness Training With At-Risk Kindergarten Children: A Case Study

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Phoneme Awareness Training With At-Risk Kindergarten Children: A Case Study

Introduction

Literacy determines the success or failure of students in our educational system. Unfortunately, America has twenty-three million functionally illiterate adults and the problem is growing at an alarming rate (Gross, 1985). Educators are desperately trying to find the key to literacy but controversy and debate surround them. Educators are urged to stop using the wrong method and to concentrate on using the right method of teaching children to read and write (Smith, 1992).

Some educators (Anderson, Osborn, and Tierney, 1984; Chall, 1967) believe that reading should be taught through a phonics approach where literacy is acquired through direct instruction of skills taught separately and then integrated through practice. The opposing theory is that literacy is acquired through the whole language approach where there is a shift from skills to an emphosis toward using strategies to gain word pronunciations and meaning from a connected text (Goodman et al, 1987; Holdaway, 1979, Smith, 1986).

Recent research in the early acquisition of literacy has increasingly focused on young children's development of phoneme awareness. Phoneme awareness is the ability to recognize that a spoken word consists of a sequence of individual sounds or sounds in a speech stream. It is also known as phonological awareness, phonemic analysis or phoneme segmentation, which progresses from sounds to letters. The earliest reports on phoneme awareness come from two Russian psycholigists, L. Y. Zhurova (1963) and D. b> Elkonin (1963, 1973). Their studies indicated that a relationship exists between phoneme segmentation abilities and subsequent success in early reading. Elkonin (1973) believed sound sequence must be known and he developed a phoneme awareness training program. In Elkonin's program, the child is given a picture and slowly articulates its name. Next, the child is given plastic chips to represent the individual sounds in each word. Directly below the picture there is a series of squares representing the number of sounds making up the

word. The child is shown how to place the chips in the squares while saying each sound. Progressively the child no longer needs the plastic chips or squares and becomes able to analyze sounds. in words.

This procedure is currently used in Clay's successful Reading Recovery Program with six-year-old children who have difficulty learning to read. Clay (1979) suggests,

> We may have to revise our thinking about the value of phonics. A strategy of analyzing spoken words into sounds, and then going from sounds to letters may be a critical precursor of the ability to utilize the heuristic tricks of phonics. And many children may not need phonic instruction once they acquire and use sequence analysis strategy. (P. 66)

several researchers indicate that phoneme awareness is an essential prerequisite to successful literacy (Ehri, 1984; Stanovich, 1986; Wallach and Wallach et al, 1977, Zificak, 1981). Longitudinal studies in early acquisition of literacy demonstrate the significant impact of phoneme awareness on word recognition, spelling, reading, comprehension, and writing. It is also indicated that phoneme awareness is a strong predictor of later achievement in reading and writing (Juel, Griffiths, and Gough, 1986; Juel, 1989). While Bradley and Bryant (1983) confirm the importance of phoneme awareness as an important element in the acquisition of reading and spelling achievement, Gough and Hollinger (1980) even suggest the lack of phonological awareness may be the most important barrier to reading acquisition yet discovered.

Many recent researchers consistently report that a phoneme awareness training program is possible and advantageous to the early acquisition of literacy. These studies have involved preschool and kindergarten students who receive phoneme awareness training sessions and indicated significant long-term positive effects on spelling and reading achievement (Ball and Blachman, 1991; Blachman, 1989; Griffith and Olson, 1992; Lundberg et al, 1988; Olofsson and Lundberg, 1985; Yopp, 1988).

As an experienced reading teacher, I have observed the joys of literacy and the sorrows of illiteracy. Many children entering schools filled with excitment and high expectations about learning to read and write gradually become frustrated and develop a low self-esteem and a sense of failure.

Remediation through direct instruction of segregated skills, pull-out programs, and retentions do not appear to prevent illiteracy. Where in our educational saytem does the cycle of illiteracy begin? Are we as a system failing to provide an environment that nurtures literacy in the formative stage? Reflective thinking, questions, observations, experience and research in early literacy acquisition have lead us to investigate the literacy environment of a kindergarten classroom. The desire is to make a positive contribution to literacy and to our children, the future.

This study using both qualitative and quantitative methods examed the effects of a phoneme awareness training program on twenty-four at-risk kindergarten children in a small urban elementary school. The study was guided by the following research questions:

1. What is the phoneme awareness program?
2. How is the program implemented in the classroom?
3. How does the program affect the early literacy development in at-risk kindergarten children?
    a. Will the program have a positive effect on reading achievement?
    b. Will the program have a positive effect on spelling achievement?
    c. Will the program have a positive effect on letter identification?
    d. Will the program have a positive effect on concepts of print?
    e. Will the program have a positive effect on verbal ability?

Methods

The subjects for this study were twenty-four at-risk kindergarten children of an intact classroom in a small Mid-East urban elementary school. Eleven percent of the children came from Afro-American families, eighty-four percent were free lunch receipients, twenty-six percent of their parents were high school graduates, and 42% were from female-headed single parent families. All subject attended the district's regular half-day kindergarten program as well as an extended-dat program which was Chapter I funded.

This study used a pretest-posttest single case study design because the subjects were an intact class and the study of the implementation and effects of phoneme awareness training program requires an in-depth examination both

qualitatively and quantitatively.

In November 1992, at the beginning of the program, all children in the classroom were pretested using (1) the Wide Range Achievement Test (WRAT-R), (2) Letter Identification Test (LIT), (3) Concepts About Print Test (CAP), and (4) Peabody Picture Vocabulary Test (PPVT). All tests were individually administered following prescribed procedures. In April 1993, at the end of the program, the subjects were all individually posttested using the same tests.

Qualitative data on the program and its effects on children were collected throughout the program by the classroom teacher and researcher through participant-observational methods (field-notes, talking to children, collecting samples of children's work, records of the program).

The Phoneme Awareness Training Program

The phoneme awareness training program is child-centered and structured around developmentally appropriate practices recommended by the National Association for the Education of Young Children (NAEYC, 1987). The classsroom is whole language based integratingchildren's experience and activities with sound awareness and print immersion. The purpose of the program is to facilitate children's ability to perceive that speech is made up of a series of sounds, a prerequisite for learning to read.

The structure of the program involves units of study focusing on the weekly presentation of a sound, "Sound of the Week" with its visual cue, a letter. Activities includes isolating a sound in a word, matching words by sounds, blending individual sounds to form a word, deletion of a letter using rhyming words and segmenting a word into a series of sounds. All phoneme awareness activities are facilitated by the teacher slowly pronouncing targeted words or streching the pronounciation so that children can perceive the separate sounds. After the teacher models the procedure, the children slowly articulate the targeted words. Isolating the initial phoneme is the beginning satge of the program and the iteration method ofZhurova (1963) in which the initial sound is repeated two or three times before the entire word (e.g. p-p-p-Polly). This method is used throughout the program.

The first day of evry week the children are greeted by a song emphasizing the "Sound of the Week". The song is played throughout the week as a signal

to begin a different activity (circle time, clean-up, readiness for snack, play, exercise, etc.). Before the song is played, the teacher develops children's awareness of the targeted sound by pronouncing the sound in isolation (e.g. /r/ R-R-R-Robin in the R-R-R-Rain). Children are then asked to repeat the sound and listen for the sound (/r/) as they interact with the song. The sound isolation, using the iteration method is expanded and merged with sound blending integrated with print by using children's names.

Everyday a leader is chosen by rotating children's names from a chart visible to them as they enter the classroom. The leader is introduced by the teacher and he/she is given the letters in his/her name. The leader interact with the class by displaying each letter, asking someone to name the letter and placing the letter on the flannel board. As the individual letter is displayed and placed on the flannel board, the teacher gives the sound in isolation. If a child incorrectly names the letter, the teacher will model the correct response and the letter sound. After the name is placed on the flannel board, the teacher models a blending activity by slowly pronouncing the sounds as she points to the letter in the leader's name (e.g. D/a/n/a/). The activity of isolating sounds is continued by having children sing a version of the song k-K-K-Katy using the leader's name.

D-D-D-Dustin, handsome Dustin
You're the only b-b-b-boy
That we adore.
When the m-m-m-moon shines
Over the cowshed,
We'll be waiting at the
K-K-K-Kitchen door.

After the song, children volunteer to tell something nice about the leader. If they are somehow restless or not focusing, the teacher will play a related sond. With the music cue they follow the leader to the rhythm of the music by singing, marching, skipping, jumping, walking the balance beam or dancing. Refreshed, the children join circle time for a segmentation activity.

The children convene on a large colorful rug which displays the alphabet letters and pictures in a circle representing the beginning sounds. The teacher

models a segmentation activity by using the rug as the phoneme awareness stimulus. The teacher slowly articulates a series of isolated sounds beginning with the targeted sound (e.g. "/d/o/g/") while pointing to the picture on the rug and then repeate the format by pointing to the letters in the word as the word on the rug is slowly articulated. The segmentation activity is extended by placing objects that start with the targeted sound on the rug as the phoneme of each object are slowly articulated and segmented by the teacher and identified by the children. The objects are then placed in a learning center where the children can manipulate the objects. Music is played and the children stretch, wriggle, etc., and join the teacher in a shared reading activity involving poetry and literature. Shared reading involves an enlarged text where the children observe the teacher reading with fluency and expression, while inviting children to read along as the teacher points to the words. The objectives are to provide an enjoyable story experience for all of the children, encourage participation, to improve print concepts, sound and reading strategies. The children are free to take risks with support, encouragement, and praises from the teacher. The literature is rich and predictable, possesses repetitive patterns, rhythm and rhymes. Each shared reading experience begin with poetry or nursery rhymes on the first instructional day and is followed with literature in the remaining days of instruction.

The shared reading experience involving nursery rhymes and poetry begin by placing a nursery rhyme or poem in a chart holder, line by line, as the teacher read the nursery rhyme or poem. The nursery rhyme or poem is chosen because it contains words that begin with the targeted sound ("Sound of the Week"). After the poem is introduced the children are involved in phoneme awareness activities (sound in isolation, sound matching, blending and segmentation deletion) facilitated by the print of the poem. The following format is used for nursery rhymes and poetry presentations.

The poem or nursery rhyme previously placed in the chart holder is reread each day and phonemen awareness activities are presented. The teacher models targeted sounds using the iteration method. A sound matching is employed by asking the children to identify the words in the poem that begin like other words which begin with the targeted sound. In the nursery rhymes "Bye Baby Bunting" the children are asked to identify words that begin like

boy, box, book. Sound deletion, blending and segmentation activities follow.

The teacher slowly points and articulates the rhyming words in the nursery rhymes, segmenting them, and ask the children to repeat them. The children are asked to point to the words that rhyme as the teacher slowly articulates the words, segmenting them. The teacher then pronounces the words by deleting the beginning sounds and articulating only the middle and ending phonemes. In the nursery rhyme, "Wee Willie Winkie", the teacher identifies the rhyming words by blending the phonemes (/t/ow/n-/g/ow/n/)-(/l/o/ck/-/cl/o/ck/). The beginning sound is then deleted and the middle and ending sound articulates (/o/wn/-/o/wn/), (/o/ck/-/o/ck/). The teacher uses these words to form other words by charting word families.

The teacher have previously recorded the poem and phoneme awareness activities. A tape recorder with the tape is placed below the poem chart with a pointer, which becomes a popular learning center where the children are free to independently listen to the poem, point to the words and practice the recorded phone awareness activities.

The parents are also involved throught a weekly newsletter that includes the poem and encourages the parents to reinforce word pointing and identifing words that begin with the targeted sound. Upon request the children can take home a copy of the tape to practice the poem or nursery rhyme with their family.

The shared reading experiences involving literature presented through big books, follow the same format of integrating phoneme awareness activities with print immersion. The literature chosen involve repetitive vocabulary patterns, predictability, rhythm, and rhyme, which facilitate the phoneme awareness activities of isolating the targeted sound, sound blending, sound deletion with rhyming words, and segmentation activities. The literature, big book, also becomes a learning center where the children can independently listen to a recorded tape, use the pointer, and engage in various recorded phoneme awareness activities. A small book and tape are also placed in the listening center after the book has been presented.

The phoneme awareness activities involving nursery rhymes and literature begin with simple sound isolation of targeted beginning phonemes. As sound stream tracking proficiency improves, the children are asked to

identify the words by connecting the phonemes to the graphemes in the nursery rhymes, poems and literature. Also, as proficiency in sound stream improves, the more complex phoneme awareness activities of deletion and substitution of a beginning phoneme and segmentation are added connecting the phonemes to the graphemes. After the shared reading experience, music is played to cue a brack involving a game or a fingerplay. The children are then dismissed to independent activities such as journal writing or visiting a learning center. During the 55-minute block, the children in groups of four are called by the teacher to a guided reading session which lasts fifteen to twenty minutes.

The instructional reading session consists of the presentation of a small book as a guided reading lesson and a phoneme segmentation activity using the Elkonin blocks. The words used in the segmentation activity are words consisting of cvc, cv, and vc. In the beginning, pictures representing the words with cvc are presented with boxes below the picture representing each phoneme. The children are given small plastic disks and are asked to push the disks as they hear the series of sounds in the word. This procedure was practiced at the end of every session in December and January.

Beginning in February the children are given boxes representing cvc words and asked to push the disks into the boxes as the teacher slowly articulate the sounds. The children are asked to repeat the word slowly articulating the sounds, phonemes, and to write the letters, graphenemes, in the boxes as they pronounce the series of sounds. After the word is wrtiten in the boxes they are asked to again push the disks into the boxes with the grapheme representation as they hear the phonemes. Next, the children are asked to write the word several times below the boxes, (e.g. write the word, write it again, write again faster). The teacher then asks the children to turn the paper over, say the word slowly and write the word as they hear the sounds. In April the children did the Elkonin block activity but when asked to turn the paper over instead of writing the word, they are asked to write a sentence as it is dictated by the teacher using previously practiced words (e.g. I see a cat. I am Dustin.)

The phoneme awareness training program was implemented throughout the kindergarten curriculum based on the whole language concept, using nursery rhymes, poems, and songs to immerse the children in print and sound

awareness. The shared reading experience was the major vehicle used to engage the children in the phoneme awareness activities because the shared reading experience create a non-threating environment. The shared reading experience also allows for individual differences in phoeneme awareness. The song segment of the phoneme awareness training program was used to add a sense of playfulness and fun which encourages socialization as the children engage in the phoeneme awareness activities.

Results

The qualitative data for this study involved informal observation and assessments of the children's literacy skills in reading, print concepts, letter sounds and verbal ability as they participated in the phoneme awareness training program.

In September of 1992, during the shared reading experience the children listened as the songs were sung, books and poems were read but could make few predictions or comments. When the teacher read the repeated patterns of language, only a few of the children responded to the text. By December, most of the children were involved in interacting with the print and sound awareness activities. By Aprill of 1993, all the children were actively engaged in the phoneme awareness activities although on different levels. The following observations are an example of children's literacy development in the program.

In November of 1992, after the big book, Dan the Flying Man, had been read the following responses were recorded.

T: What's the title of the book? (Children raised their hands)
C7: Me forgots.
T: What is the title of the book?
C7: Me forgots.
C4: Dan.
C16: The Flying Boy.
T: (model by saying title and pointing to the word) What sound do you hear at the beginning of D-D-D-Dan?
C7: /u/, /u/.
C16: /D/D/D/.

In April of 1993, the big book Yes Ma'am was read and the following was recorded.

T: What is the title of the book?
C7: Yes, Ma'am.
T: What sound do you hear at the beginning of Yes?
C7: /Y/Y/
T: What letter goes with the /Y/Y/ sound?
C4: Y
T: Can you come up and point to the word that begins with /Y/Y/?
(C7 comes and points to Yes in the title.)

Children's work sample of journal writing was also collected over time and evaluated using the developmental stages of spelling developed by Emilia Fereiro and Ana Teberosky (1982) -- Stage 0: Scribbling, Stage 1: Linear writing, Stage 2: Random-letter writing, Stage 3: Phonetic writing, Stage 4: Transitional spelling, Stage 5: Conventional spelling.

In the program, children were encouraged to write in response to poems, books, songs, class discussions, or experiences, that they wished to share. Children drew an illustration of their thoughts and wrote their story. All forms of writing and spelling were encouraged, accepted and praised. In September 1992, some children told their story from scribbles or a few letters they copied in the room. As soon as they learned their names, children who were scribbling replaced the scribbling with their name or random letter writing. Teacher observations revealed that children who were able to segment sounds during phoneme awraeness training in small group instruction progressed from random-letter writing to phonetic writing and some even moved to the transistional spelling stage.

A t-test for dependent sample was also used to compare the differences in children's writing stages from November 1992 to April 1993. The mean for Novemeber was 1.15 with a standard deviation of .38, and the mean for April was 2.63 with a standard deviation of .60. The t-value was 12.52 (df=18, a= .05) which is significant indicating children in April had better spelling skills than in November. That is, the phoneme awareness training program had a

significant positive effect on children's spelling development.

Children's literacy skills were also assessed by the classroom teacher using a checklist in September and April. A t-test for dependent sample was conducted to compare the differences. The mean score in September was 19.16 with a standard deviation of 3.76, and the mean score in April was 37.63 (SD=5.58). The t-value was 15.09 (df+18, a+.05) which is significant indicating children scored higher in literacy skills in April than in September. That is, the phoneme awareness traing program had a significant positive effect on children's literacy skills.

Children's pretest and posttest scores in WRAT Reading, WRAT Spelling, LIT, CAP, and PPVT were also analyzed using t-test for dependent samples. All indicated significant differences between pretest scores and posttest scores with post test score higher, which means the phoneme awareness traing program had positive effects on at-risk kindergarten children in reading, spelling, letter identification, print concepts, and vocabulary. The results are summarized in Table 1.

Table 1. Summary of t-test results for WRAT (reading), WRAT (spelling), LIT, CAP, and PPVT.

	n	Mean	SD	df	t
Pre-WRAT (R)	19	79.37	11.23		
Post-WRAT (R)	19	81.53	13.33	18	5.39*
Pre-WRAT (S)	19	81.53	13.34		
Post-WRAT (S)	19	94.37	8.62	18	6.78*
Pre-LIT	19	6.32	6.53		
Post-LIT	19	45.00	13.45	18	12*
Pre-CAP	19	4.53	2.50		
Post-CAP	19	14.79	2.97	18	15.2*

(Table 1 continued)

Pre-PPVT	19	95.21	11.56		
Post-PPVT	19	106.58	16.60	18	5.39*

Note: * significant at a=.05

The results of this study suggest that the phoneme awareness training program has positive effects on early literacy skills of at-risk kindergarten children. The findings are consistent with the results of previous investigations on early literacy development (Bradley & Bryant, 1983; Juel, 1989; Juel, Griffith & Gough, 1986; Lundberg et al, 1988) which conclude that phoneme awareness has a powerful influence on learning to read and write. Recent research by Torgesen, Morgan and davis (1993) also indicates that training non-reading kindergarten children in phoneme awareness involving blending and segmenting skills produce significant improvements in children's ability to segment words into phonemes and these tasks showed a positive effect for word learning. As Vellutino (1991) suggests, instruction that facilitates both phoneme awareness and alphabetic coding is vital links in learning to read. Phoneme segmentation skills enable beginners to learn fingerpoint-read memorized text in the shared reading experience (Ehri and Sweet, 1991).

Implications

Findings of this study send a strong message for the inclusion and infusion of a phoneme awareness training program in all kindergarten curriculums. Since robust research in the area of phoneme awraeness which only began to draw attention in the last decade has shown the importance and positive effects for children receiving training in phoneme awareness, it appears that curriculum directors should provide in-service training and staff development activities concerning the importance and effects of phoneme awareness in the acquisition of literacy and implementation of such a program. Research in phoneme awareness also implies that phoneme awareness should be included in the screening of kindergarten children and older students who

are experiencing failure in the acquisition of literacy. Children who do not hear sounds in a speech stream in the formative years often have difficulty in reading and spelling as they progress through our educational system. Spelling may be an area that needs more in-depth investigation concerning phoneme awareness since spelling a word requires the analyzation of phonemes. Finally, if phoneme awareness is a prerequisite to litearcy, then a phoneme awareness training program could be a preventive method of reading instruction instead of a remedial method, if begun in the early years.

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